

REMARKS/ARGUMENTS

This application contains claims 1 through 17. Claims 10, 11 and 14 through 17 have been withdrawn due to an election of species requirement, but are to be rejoined upon a finding that the elected group of claims is allowable. Claims 1, 4, 7, 10, 11, 12 and 13 were amended to address the perceived confusion with the term “PIB”, which was the subject of a rejection presented under 35 USC Section 112, second paragraph. Applicants submit that the present amendments address this Section 112 rejection and the withdrawal thereof is respectfully requested.

Claims 12 and 13 have now been determined to distinguish over the prior art and, in view of the amendments to address the stated Section 112 rejections, applicants submit that these claims are now in condition for allowance. Claims 1 through 9 now stand rejected under 35 USC Section 102(b) as being anticipated by certain examples of U.S. Patent No. 4,086,251 to Cengel et al (hereinafter “the Cengel et al. patent”). Specifically, it is noted that Examples 39 to 43 of the Cengel et al. patent describe a process for making maleic anhydride functionalized polybutenes in the presence of substances that can act as free radical inhibitors (although they are not used for this function in the context of the Cengel et al. patent). As is conceded, the Cengel et al. patent does not describe the terminal vinylidene content of the polybutene, or the functionality of the resulting product. However, it is alleged that;

“Although the reference has not reported the terminal vinylidene percentage or the product functionality, the claimed values would be inherent in view of the polymer/MA mol ratio used and the reported PBSA yields. The burden of proof is shifted to applicants to show that the reference examples do not include the unreported values.”

Where “inherency” is alleged to support a rejection presented under 35 USC Section 102(b), the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish inherency of that result or characteristic (*in re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (reversed rejection because inherency was based on what would result from the optimization of conditions, not what was necessarily present in the prior art); *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). “To establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is

necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient” In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). “In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the prior art “ *Ex parte Levy* 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990).

In the present case, no basis in fact and/or technical reasoning has been provided supporting the determination that the claimed limit on terminal vinylidene content is inherently met by the materials of the noted examples of Cengel et al. patent. As for the claimed functionality limits of the dependent claims, functionality is not dependent simply on molar ratio of polymer to maleic anhydride and yield of PBSA, as is clear from the formula for determining functionality provided in applicant’s specification (see page 12, line 25). Therefore, again, a *prima facie* showing of anticipation due to “inherency” has not been established.

Although applicants believe there is insufficient basis to support the determination of inherency, and to shift any burden of proof to applicants to prove otherwise, applicants are willing to provide distinguishing comments in order to speed the prosecution of this application. With regard to the terminal vinylidene content of the claimed polyalkene, applicants note that, as described in the present specification, conventional polyisobutenes, formed by cationic polymerization using aluminum chloride catalysts generally have a relatively low terminal unsaturation content and polyisobutenes having a high terminal unsaturation content; so-called “reactive” polyisobutenes, have been achieved by BF₃-catalyzed polymerization of isobutene (see page 2 of the present specification). The Cengel et al. patent only describes polybutenes resulting from polymerization in the presence of Friedel-Crafts catalysts (AlCl₃) and expressly note that the polybutenes of the exemplified materials had a chlorine content derived from the polymerization catalyst. Further, reaction of maleic anhydride with reactive polyisobutene formed by polymerization in the presence of a BF₃ catalyst and use of a “chain-stopping agent” is not described in the patent literature until U.S. Patent No. 4,152,499 to Boerzel et al., which claimed priority of a German application filed subsequent to the earliest priority date of the Cengel et al.

patent. Thus, it is apparent that polyalkene of the exemplified materials of the Cengel et al. patent did not inherently possess the terminal vinylidene content required by the present claims.

Regarding the functionality limitations of the present claims, it is noted that these are only secondary limitations of dependent claims. Thus, even if such functionalities were disclosed by the Cengel et al. patent (and applicants submit they are not), the present dependent claims would remain distinguishable for the reasons provided above. Further, the polyalkene to maleic anhydride ratio of the exemplified materials of the Cengel et al. patent, and the PBSA yields suggest that the functionality far below the lowest limit claimed (1, as claimed in claim 8). Specifically, the exemplified reactions of the Cengel et al. patent use a relatively low molecular weight polyalkene (M_n of 914) and a relatively low polyalkene to maleic anhydride ratio (1.0:1.1), and the reactivity of the polyalkene is so low that only 69% of the resulting product is PBSA reaction product. The concurrent low polyalkene molecular weight, low polyalkene: maleic anhydride ratio and low level of polyalkene reactivity makes it unlikely that multiple succinic groups would be present on any significant portion of the polymer backbones, and thus, it is unlikely that a functionality as high as 1 could have been achieved.

Based upon the foregoing, applicants submit (1) that no *prima facie* case of anticipation under 35 USC Section 102(b) premised on “inherency” has been established; and (2) that any such anticipation rejection, if properly supported, would be overcome by the distinguishing comments provided above. Applicants therefore request that the rejection presented under Section 102(b) be withdrawn and that the application now be passed to issue.

Respectfully submitted,



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